

## CLAIMS

What is claimed is:

1. Apparatus for forming a bipolar plate subassembly for a fuel cell,  
5 comprising:

a) a first anode plate having a reactive area and having a first anode bore therethrough, said first anode bore having an axis disposed a standard distance from said anode reactive area;

10 b) a first cathode plate having a reactive area and having a first cathode bore therethrough, said first cathode bore having an axis disposed a standard distance from said cathode reactive area; and

15 c) a first pin disposed in said first anode bore and said first cathode bore to axially align said bores and join said anode plate to said cathode plate to form said bipolar plate subassembly having said respective reactive areas of said anode plate and said cathode plate aligned.

2. Apparatus in accordance with Claim 1 wherein:

20 a) said anode plate includes a second anode bore having an axis disposed a standard distance from said anode reactive area;

b) said cathode plate includes a second cathode bore having an axis disposed a standard distance from said cathode reactive area; and

c) a second pin is disposed in said second anode bore and said second cathode bore.

25 3. Apparatus in accordance with Claim 1 wherein one of said first anode bore and said first cathode bore has a counterbore portion having a diameter larger than said bore, and wherein said first pin has a first end portion having a diameter substantially equal to said diameter of said counterbore such that said first pin end portion is receivable in said counterbore portion.

4. Apparatus in accordance with Claim 3 wherein said pin first end portion is provided with an axial well having a well diameter, and wherein said pin has a second end portion opposite said first end portion, said second end portion having a diameter substantially equal to said well diameter.

5. Apparatus in accordance with Claim 4 wherein said pin second end portion extends from said bipolar plate subassembly.

6. A method for forming a bipolar plate subassembly for a fuel cell, comprising the steps of:

a) providing an anode plate having a first anode bore therethrough, said first anode bore having an axis disposed a standard distance from said anode reactive area;

b) providing a cathode plate having a first cathode bore therethrough, said first cathode bore having an axis disposed a standard distance from said cathode reactive area; and

c) disposing a first pin in said first anode bore and said first cathode bore to axially align said bores and join said anode plate to said cathode plate to form said bipolar plate subassembly having said respective reactive areas of said anode plate and said cathode plate aligned.

7. A method in accordance with Claim 6, further comprising the steps of:

a) providing a second anode bore through said anode plate, said second anode bore having an axis disposed a standard distance from said anode reactive area;

b) providing a second cathode bore through said cathode plate, said second cathode bore having an axis disposed a standard distance from said cathode reactive area; and

c) disposing a second pin in said second anode bore and said second cathode bore.

8. A method for joining first and second bipolar plate subassemblies to

form a portion of a proton exchange membrane fuel cell stack assembly, wherein a first one of said subassemblies includes a first pin portion extending from said subassembly, and wherein a second one of said subassemblies includes a pin portion having an axial well, comprising the steps of:

- 5           a) disposing a proton exchange membrane between said first and second subassemblies;
- b) axially aligning said pin portion of said first subassembly with said axial well of said second subassembly; and
- c) inserting said pin portion into said well to capture said membrane between
- 10       said first and second bipolar plate subassemblies.

9. A method in accordance with Claim 8 wherein one of said subassemblies includes a second pin portion extending from said subassembly, and wherein the other of said subassemblies includes a second pin portion having a second axial well, comprising the steps of:

- 5           a) axially aligning said second extending pin portion with said second axial well; and
- b) inserting said second extending pin portion into said second axial well.